



# EBERLINE SERVICES

RECEIVED FEBRUARY 17, 2010 REVISION 1

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December 21, 2009 (original)  
February 17, 2010 (revised)

Mr. Michael Neely  
CH2M Hill Plateau Remediation Company  
P.O. Box 1600  
Mail Stop – B6-06  
Richland, WA 99352

Reference: **P.O. #33677**  
**Eberline Analytical R9-11-075-7515, SDG H4082**

Dear Mr. Neely:

Enclosed is a data report for five solid (soil) samples designated under SAF No. F10-025 received at Eberline Analytical on November 19, 2009. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

N. Joseph Verville  
Client Services Manager

NJV/jag

Enclosure: Data Package

**RECEIVED**  
JUL 21 2010  
**EDMC**

Eberline Analytical  
W.O. No. R9-11-075-7515

CH2M Hill Plateau Remediation Company  
SDG H4082

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Case Narrative

Page 1 of 1

**1.0 GENERAL**

CH2M Hill Plateau Remediation Company (CHPRC) Sample Delivery Group H4082 was composed of five solid (soil) samples designated under SAF No. F10-025 with a Project Designation of: 200-PW-2 OU Characterization Vadose Zone – Soil ("L" Well).

The samples were received as stated on the chain-of-custody documents. Any discrepancies are noted on the Eberline Analytical Sample Receipt Checklist.

**2.0 ANALYSIS NOTES**

**2.1 Tritium Analysis**

No problems were encountered during the course of the analyses.

**2.2 Carbon-14 Analysis**

No problems were encountered during the course of the analyses.

**2.3 Nickel-63 Analysis**

No problems were encountered during the course of the analyses.

**2.4 Iodine-129 Analysis**

No problems were encountered during the course of the analyses.

**2.5 Isotopic Thorium Analysis**

No problems were encountered during the course of the analyses.

**2.5 Neptunium-237 Analysis**

No problems were encountered during the course of the analyses.

**3.0 Case Narrative Certification Statement**

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

  
\_\_\_\_\_  
N. Joseph Verville  
Client Services Manager

2/17/10  
\_\_\_\_\_  
Date

**Problem and Discrepancy Report**  
**Eberline**  
**SDG H4082**

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1. The data package has the following issues:

a) Lab sample summary, SAF # is incorrect. It appears as F10-026 and should be F10-025.

**Resolution:** *Provide correction.*

**Lab Response:** **Corrected SAF on Lab Sample Summary and other pages.**

b) Narrative, Thorium, Please discuss RPD out of limits of Th-228 and Th-232.

**Resolution:** *Provide discussion.*

**Lab Response:** According to the DOE Quality Systems for Analytical Services, Revision 2.5, November 2009, Page D-32, the DER must be less than or equal to 3. "When either the DER or the RPD pass, then the duplicate is acceptable." In this case, the RPDs were greater than 25%, however the DERs were all less than 3.

Please correct the issues and resubmit the hard copy data package.

SDG 7515  
Contact N. Joseph Verville

Client CHPRC  
Contract No. 33677  
Case no SDG H4082

S U M M A R Y   D A T A   S E C T I O N

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VB

Prepared by

*N. Joseph Verville*

Reviewed by

Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-TOC  
Version 3.06  
Report date 02/11/10

SDG 7515  
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4082

## ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

## SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

## PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

## WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

## METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

## LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

## REPORT GUIDES

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## SUMMARY DATA SECTION

Page 1

Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/11/10

SDG 7515  
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC  
Contract No. 33677  
Case no SDG H4082

## ABOUT THE DATA SUMMARY SECTION

## DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

## MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

## DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

## METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

## REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

## REPORT GUIDES

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/11/10

## EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4082

REVISION 1

SDG 7515

Contact N. Joseph Verville

## LAB SAMPLE SUMMARY

Client CHPRCContract No. 33677Case no SDG H4082

LAB						CHAIN OF		
SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CUSTODY	COLLECTED	
R911075-01	B22V37	C7514 (299E2425); I-070	SOLID		F10-025	F10-025-001	11/13/09 09:50	
R911075-02	B22V28	C7514 (299E2425); I-006	SOLID		F10-025	F10-025-009	11/09/09 10:58	
R911075-03	B22VR4	C7514 (299E2425); I-006D	SOLID		F10-025	F10-025-013	11/09/09 10:58	
R911075-04	B22V31	C7514 (299E2425); I-016	SOLID		F10-025	F10-025-017	11/10/09 07:50	
R911075-05	B22V34	C7514 (299E2425); I-045	SOLID		F10-025	F10-025-026	11/12/09 08:17	
R911075-06	Lab Control Sample		SOLID		F10-025			
R911075-07	Method Blank		SOLID		F10-025			
R911075-08	Duplicate (R911075-01)	C7514 (299E2425); I-070	SOLID		F10-025		11/13/09 09:50	

LAB SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLNEProtocol CHPRCVersion Ver 1.0Form DVD-LSVersion 3.06Report date 02/11/10

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EBERLINE ANALYTICAL/RICHMOND

REVISION 1

SAMPLE DELIVERY GROUP H4082

SDG 7515  
Contact N. Joseph Verville

QC SUMMARY

Client CHPRC  
Contract No. 33677  
Case no SDG H4082

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	DEPARTMENT SAMPLE ID
7515	F10-025-001	B22V37	SOLID	97.2	196 g		11/19/09 6	R911075-01	7515-001
	F10-025-009	B22V28	SOLID	97.3	167 g		11/19/09 10	R911075-02	7515-002
	F10-025-013	B22VR4	SOLID	97.2	155 g		11/19/09 10	R911075-03	7515-003
	F10-025-017	B22V31	SOLID	97.2	139 g		11/19/09 9	R911075-04	7515-004
	F10-025-026	B22V34	SOLID	97.2	124 g		11/19/09 7	R911075-05	7515-005
		Method Blank	SOLID					R911075-07	7515-007
		Lab Control Sample	SOLID					R911075-06	7515-006
		Duplicate (R911075-01)	SOLID	97.2	196 g		11/19/09 6	R911075-08	7515-008

QC SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
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Form DVD-QS  
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# EBERLINE ANALYTICAL/RICHMOND

REVISION 1

SAMPLE DELIVERY GROUP H4082

SDG 7515

Contact N. Joseph Verville

## PREP BATCH SUMMARY

Client CHPRC

Contract No. 33677

Case no SDG H4082

TEST	MATRIX	METHOD	PREPARATION ERROR	PLANCHETS ANALYZED				QUALI-				
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	FIER
Alpha Spectroscopy												
NP	SOLID	Neptunium in Solids	7232-030	14.8	5			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Solids	7232-030	8.0	5			1	1	1/1		
Gamma Spectroscopy												
I	SOLID	Iodine 129 in Solids	7232-030	19.4	5			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Solids	7232-030	10.0	5			1	1	1/1		
H	SOLID	Tritium in Solids	7232-030	10.0	5			1	1	1/1		
NI_L	SOLID	Nickel 63 in Solids	7232-030	11.2	5			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLE

Protocol CHPRC

Version Ver 1.0

Form DVD-PBS

Version 3.06

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## EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4082

REVISION 1

SDG 7515

Contact N. Joseph Verville

## LAB WORK SUMMARY

Client CHPRC

Contract No. 33677

Case no SDG H4082

LAB SAMPLE	CLIENT SAMPLE ID									
COLLECTED	LOCATION		MATRIX		SUF-					
RECEIVED	CUSTODY	SAF No		PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD
R911075-01	B22V37			7515-001	C		12/02/09	12/04/09	BW	Carbon 14 in Solids
11/13/09	C7514(299E2425); I-070		SOLID	7515-001	H		12/02/09	12/03/09	BW	Tritium in Solids
11/19/09	F10-025-001	F10-025		7515-001	I		12/14/09	12/17/09	BW	Iodine 129 in Solids
				7515-001	NI_L		12/09/09	12/10/09	BW	Nickel 63 in Solids
				7515-001	NP		12/08/09	12/11/09	BW	Neptunium in Solids
				7515-001	TH		12/04/09	12/08/09	BW	Thorium, Isotopic in Solids
R911075-02	B22V28			7515-002	C		12/02/09	12/04/09	BW	Carbon 14 in Solids
11/09/09	C7514(299E2425); I-006		SOLID	7515-002	H		12/02/09	12/03/09	BW	Tritium in Solids
11/19/09	F10-025-009	F10-025		7515-002	I		12/14/09	12/17/09	BW	Iodine 129 in Solids
				7515-002	NI_L		12/09/09	12/10/09	BW	Nickel 63 in Solids
				7515-002	NP		12/08/09	12/11/09	BW	Neptunium in Solids
				7515-002	TH		12/04/09	12/08/09	BW	Thorium, Isotopic in Solids
R911075-03	B22VR4			7515-003	C		12/02/09	12/04/09	BW	Carbon 14 in Solids
11/09/09	C7514(299E2425); I-006D		SOLID	7515-003	H		12/02/09	12/03/09	BW	Tritium in Solids
11/19/09	F10-025-013	F10-025		7515-003	I		12/14/09	12/17/09	BW	Iodine 129 in Solids
				7515-003	NI_L		12/09/09	12/10/09	BW	Nickel 63 in Solids
				7515-003	NP		12/08/09	12/11/09	BW	Neptunium in Solids
				7515-003	TH		12/04/09	12/08/09	BW	Thorium, Isotopic in Solids
R911075-04	B22V31			7515-004	C		12/02/09	12/04/09	BW	Carbon 14 in Solids
11/10/09	C7514(299E2425); I-016		SOLID	7515-004	H		12/02/09	12/03/09	BW	Tritium in Solids
11/19/09	F10-025-017	F10-025		7515-004	I		12/14/09	12/17/09	BW	Iodine 129 in Solids
				7515-004	NI_L		12/09/09	12/10/09	BW	Nickel 63 in Solids
				7515-004	NP		12/08/09	12/11/09	BW	Neptunium in Solids
				7515-004	TH		12/04/09	12/08/09	BW	Thorium, Isotopic in Solids
R911075-05	B22V34			7515-005	C		12/02/09	12/04/09	BW	Carbon 14 in Solids
11/12/09	C7514(299E2425); I-045		SOLID	7515-005	H		12/02/09	12/03/09	BW	Tritium in Solids
11/19/09	F10-025-026	F10-025		7515-005	I		12/14/09	12/17/09	BW	Iodine 129 in Solids
				7515-005	NI_L		12/09/09	12/10/09	BW	Nickel 63 in Solids
				7515-005	NP		12/08/09	12/11/09	BW	Neptunium in Solids
				7515-005	TH		12/04/09	12/08/09	BW	Thorium, Isotopic in Solids

WORK SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLINE

Protocol CHPRC

Version Ver 1.0

Form DVD-LWS

Version 3.06

Report date 02/11/10

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**EBERLINE ANALYTICAL/RICHMOND**

SAMPLE DELIVERY GROUP H4082

**REVISION 1**

SDG 7515  
Contact N. Joseph Verville

**WORK SUMMARY, cont.**

Client CHPRC  
Contract No. 33677  
Case no SDG H4082

LAB SAMPLE	CLIENT SAMPLE ID									
COLLECTED	LOCATION	MATRIX		SUP-						
RECEIVED	CUSTODY	SAF No	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
R911075-06	Lab Control Sample		7515-006	C		12/03/09	12/04/09	BW	Carbon 14 in Solids	
		SOLID	7515-006	H		12/03/09	12/03/09	BW	Tritium in Solids	
		F10-025	7515-006	I		12/14/09	12/17/09	BW	Iodine 129 in Solids	
			7515-006	NI_L		12/09/09	12/10/09	BW	Nickel 63 in Solids	
			7515-006	NP		12/08/09	12/11/09	BW	Neptunium in Solids	
			7515-006	TH		12/04/09	12/08/09	BW	Thorium, Isotopic in Solids	
R911075-07	Method Blank		7515-007	C		12/02/09	12/04/09	BW	Carbon 14 in Solids	
		SOLID	7515-007	H		12/02/09	12/03/09	BW	Tritium in Solids	
		F10-025	7515-007	I		12/14/09	12/17/09	BW	Iodine 129 in Solids	
			7515-007	NI_L		12/09/09	12/10/09	BW	Nickel 63 in Solids	
			7515-007	NP		12/08/09	12/11/09	BW	Neptunium in Solids	
			7515-007	TH		12/08/09	12/08/09	BW	Thorium, Isotopic in Solids	
R911075-08	Duplicate (R911075-01)		7515-008	C		12/02/09	12/04/09	BW	Carbon 14 in Solids	
11/13/09	C7514(299E2425);I-070	SOLID	7515-008	H		12/02/09	12/03/09	BW	Tritium in Solids	
11/19/09		F10-025	7515-008	I		12/14/09	12/17/09	BW	Iodine 129 in Solids	
			7515-008	NI_L		12/09/09	12/10/09	BW	Nickel 63 in Solids	
			7515-008	NP		12/08/09	12/11/09	BW	Neptunium in Solids	
			7515-008	TH		12/04/09	12/08/09	BW	Thorium, Isotopic in Solids	

**COUNTS OF TESTS BY SAMPLE TYPE**

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
C	F10-025	Carbon 14 in Solids	C14_COX_LSC	5			1	1	1	8
H	F10-025	Tritium in Solids	TRITIUM_COX_LSC	5			1	1	1	8
I	F10-025	Iodine 129 in Solids	I129_SEP_LEPS_GS	5			1	1	1	8
NI_L	F10-025	Nickel 63 in Solids	NI63_LSC	5			1	1	1	8
NP	F10-025	Neptunium in Solids	NP237_LLE_PLATE_AEA	5			1	1	1	8
TH	F10-025	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	5			1	1	1	8
TOTALS				30			6	6	6	48

WORK SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-LWS  
Version 3.06  
Report date 02/11/10

EBERLINE ANALYTICAL / RICHMOND

REVISION 1

SAMPLE DELIVERY GROUP H4082

7515-007

Method Blank

METHOD BLANK

SDG <u>7515</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4082</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>33677</u>	
Lab sample id <u>R911075-07</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7515-007</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F10-025</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-0.242	4.3	7.44	400	U	H
Carbon 14	14762-75-5	1.44	3.8	6.37	50.0	U	C
Nickel 63	13981-37-8	-1.09	1.9	3.38	30.0	U	NI_L
Iodine 129	15046-84-1	-0.555	1.2	1.58	5.00	U	I
Thorium 228	14274-82-9	0.041	0.17	0.316	1.00	U	TH
Thorium 230	14269-63-7	0.247	0.41	0.729	1.00	U	TH
Thorium 232	TH-232	0	0.082	0.315	1.00	U	TH
Neptunium 237	13994-20-2	0	0.075	0.113	1.00	U	NP

QC-BLANK #71600
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METHOD BLANKS

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>02/11/10</u>

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EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4082

REVISION 1

7515-006

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7515</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4082</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>33677</u>	
Lab sample id <u>R911075-06</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7515-006</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F10-025</u>	

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	970	22	7.28	400		H	1130	45	86	86-114	80-120
Carbon 14	3330	67	15.4	50.0		C	3190	130	104	83-117	80-120
Nickel 63	227	6.2	3.32	30.0		NI_L	262	10	87	84-116	80-120
Iodine 129	128	3.8	1.63	5.00		I	127	5.1	101	70-130	80-120
Thorium 230	23.1	3.1	0.822	1.00		TH	22.7	0.91	102	75-125	80-120
Neptunium 237	6.56	1.0	0.105	1.00		NP	5.96	0.24	110	64-136	80-120

QC-LCS #71599

LAB CONTROL SAMPLES

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>02/11/10</u>

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4082

REVISION 1

7515-008

B22V37

DUPLICATE

SDG <u>7515</u>		Client/Case no <u>CHPRC</u> SDG <u>H4082</u>	
Contact <u>N. Joseph Verville</u>		Contract No. <u>33677</u>	
DUPLICATE		ORIGINAL	
Lab sample id <u>R911075-08</u>	Lab sample id <u>R911075-01</u>	Client sample id <u>B22V37</u>	
Dept sample id <u>7515-008</u>	Dept sample id <u>7515-001</u>	Location/Matrix <u>C7514 (299E2425); I-070</u> <u>SOLID</u>	
	Received <u>11/19/09</u>	Collected/Weight <u>11/13/09 09:50</u> <u>196 g</u>	
% solids <u>97.2</u>	% solids <u>97.2</u>	Custody/SAF No <u>F10-025-001</u> <u>F10-025</u>	

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	DER σ
Tritium	-1.87	3.8	6.76	400	U	H	0.545	3.9	6.70	U	-		0.9
Carbon 14	1.06	3.4	5.71	50.0	U	C	2.86	3.5	5.77	U	-		0.7
Nickel 63	-1.47	2.2	3.87	30.0	U	NI_L	-1.70	2.5	4.35	U	-		0.1
Iodine 129	-0.639	1.4	1.95	5.00	U	I	-1.02	1.3	1.56	U	-		0.4
Thorium 228	0.917	0.47	0.351	1.00		TH	0.559	0.28	0.267		49	113	1.3
Thorium 230	0.641	0.46	0.776	1.00	U	TH	0.802	0.49	0.643		22	141	0.5
Thorium 232	0.366	0.28	0.350	1.00		TH	0.698	0.28	0.267		62	113	1.7
Neptunium 237	0	0.068	0.103	1.00	U	NP	0	0.081	0.310	U	-		0

QC-DUP#1 71601

200-PW-2 OU Characterization Vadose Zone -  
Soil ("L" Well)

DUPLICATES

Page 1

SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>02/11/10</u>

EBERLINE ANALYTICAL / RICHMOND

REVISION 1

SAMPLE DELIVERY GROUP H4082

7515-001

B22V37

DATA SHEET

SDG <u>7515</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4082</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>33677</u>	
Lab sample id <u>R911075-01</u>	Client sample id <u>B22V37</u>	
Dept sample id <u>7515-001</u>	Location/Matrix <u>C7514(299E2425);I-070</u>	<u>SOLID</u>
Received <u>11/19/09</u>	Collected/Weight <u>11/13/09 09:50</u>	<u>196 g</u>
% solids <u>97.2</u>	Custody/SAF No <u>F10-025-001</u>	<u>F10-025</u>

ANALYTE	CAS NO	RESULT pCi/g	2 $\sigma$ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.545	3.9	6.70	400	U	H
Carbon 14	14762-75-5	2.86	3.5	5.77	50.0	U	C
Nickel 63	13981-37-8	-1.70	2.5	4.35	30.0	U	NI_L
Iodine 129	15046-84-1	-1.02	1.3	1.56	5.00	U	I
Thorium 228	14274-82-9	0.559	0.28	0.267	1.00		TH
Thorium 230	14269-63-7	0.802	0.49	0.643	1.00		TH
Thorium 232	TH-232	0.698	0.28	0.267	1.00		TH
Neptunium 237	13994-20-2	0	0.081	0.310	1.00	U	NP

200-PW-2 OU Characterization Vadose Zone -  
Soil ("L" Well)

DATA SHEETS

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>02/11/10</u>

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EBERLINE ANALYTICAL / RICHMOND

REVISION 1

SAMPLE DELIVERY GROUP H4082

7515-002

B22V28

DATA SHEET

SDG <u>7515</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4082</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>33677</u>	
Lab sample id <u>R911075-02</u>	Client sample id <u>B22V28</u>	
Dept sample id <u>7515-002</u>	Location/Matrix <u>C7514(299E2425);I-006</u>	<u>SOLID</u>
Received <u>11/19/09</u>	Collected/Weight <u>11/09/09 10:58</u>	<u>167 g</u>
% solids <u>97.3</u>	Custody/SAF No <u>F10-025-009</u>	<u>F10-025</u>

ANALYTE	CAS NO	RESULT pCi/g	2 $\sigma$ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.397	4.7	8.13	400	U	H
Carbon 14	14762-75-5	0.567	3.6	6.12	50.0	U	C
Nickel 63	13981-37-8	-1.57	2.2	3.80	30.0	U	NI_L
Iodine 129	15046-84-1	-0.420	1.2	1.63	5.00	U	I
Thorium 228	14274-82-9	0.856	0.34	0.252	1.00		TH
Thorium 230	14269-63-7	0.592	0.46	0.628	1.00	U	TH
Thorium 232	TH-232	0.691	0.33	0.252	1.00		TH
Neptunium 237	13994-20-2	0.041	0.17	0.317	1.00	U	NP

200-PW-2 OU Characterization Vadose Zone -  
Soil ("L" Well)

DATA SHEETS

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Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>02/11/10</u>

EBERLINE ANALYTICAL / RICHMOND

REVISION 1

SAMPLE DELIVERY GROUP H4082

7515-003

B22VR4

DATA SHEET

SDG <u>7515</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4082</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>33677</u>	
Lab sample id <u>R911075-03</u>	Client sample id <u>B22VR4</u>	
Dept sample id <u>7515-003</u>	Location/Matrix <u>C7514(299E2425);I-006D</u>	<u>SOLID</u>
Received <u>11/19/09</u>	Collected/Weight <u>11/09/09 10:58</u>	<u>155 g</u>
% solids <u>97.2</u>	Custody/SAF No <u>F10-025-013</u>	<u>F10-025</u>

ANALYTE	CAS NO	RESULT pCi/g	2 $\sigma$ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.199	3.6	6.13	400	U	H
Carbon 14	14762-75-5	-0.372	3.0	5.15	50.0	U	C
Nickel 63	13981-37-8	-0.592	2.1	3.68	30.0	U	NI_L
Iodine 129	15046-84-1	-0.543	1.1	1.53	5.00	U	I
Thorium 228	14274-82-9	0.486	0.28	0.332	1.00		TH
Thorium 230	14269-63-7	1.00	0.49	0.639	1.00		TH
Thorium 232	TH-232	0.555	0.28	0.265	1.00		TH
Neptunium 237	13994-20-2	0	0.093	0.140	1.00	U	NP

200-PW-2 OU Characterization Vadose Zone -  
Soil ("L" Well)

DATA SHEETS

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Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>02/11/10</u>

EBERLINE ANALYTICAL / RICHMOND  
SAMPLE DELIVERY GROUP H4082

REVISION 1

7515-004

B22V31

DATA SHEET

SDG <u>7515</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4082</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>33677</u>	
Lab sample id <u>R911075-04</u>	Client sample id <u>B22V31</u>	
Dept sample id <u>7515-004</u>	Location/Matrix <u>C7514(299E2425);I-016</u>	<u>SOLID</u>
Received <u>11/19/09</u>	Collected/Weight <u>11/10/09 07:50</u>	<u>139 g</u>
% solids <u>97.2</u>	Custody/SAF No <u>F10-025-017</u>	<u>F10-025</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	1.60	4.2	7.05	400	U	H
Carbon 14	14762-75-5	2.36	3.2	5.32	50.0	U	C
Nickel 63	13981-37-8	-1.49	2.1	3.60	30.0	U	NI_L
Iodine 129	15046-84-1	-1.05	1.3	1.78	5.00	U	I
Thorium 228	14274-82-9	1.02	0.45	0.424	1.00		TH
Thorium 230	14269-63-7	1.46	0.63	0.784	1.00		TH
Thorium 232	TH-232	1.06	0.45	0.339	1.00		TH
Neptunium 237	13994-20-2	0	0.11	0.421	1.00	U	NP

200-PW-2 OU Characterization Vadose Zone -  
Soil ("L" Well)

DATA SHEETS

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Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>02/11/10</u>

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REVISION 1

EBERLINE ANALYTICAL / RICHMOND  
SAMPLE DELIVERY GROUP H4082

7515-005

B22V34

DATA SHEET

SDG <u>7515</u>	Client/Case no <u>CHPRC</u>	SDG <u>H4082</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>33677</u>	
Lab sample id <u>R911075-05</u>	Client sample id <u>B22V34</u>	
Dept sample id <u>7515-005</u>	Location/Matrix <u>C7514(299E2425);I-045</u> <u>SOLID</u>	
Received <u>11/19/09</u>	Collected/Weight <u>11/12/09 08:17</u> <u>124 g</u>	
% solids <u>97.2</u>	Custody/SAF No <u>F10-025-026</u> <u>F10-025</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-2.74	4.1	7.31	400	U	H
Carbon 14	14762-75-5	0.729	3.2	5.44	50.0	U	C
Nickel 63	13981-37-8	0.630	2.3	3.92	30.0	U	NI_L
Iodine 129	15046-84-1	-0.161	1.1	1.55	5.00	U	I
Thorium 228	14274-82-9	0.747	0.42	0.398	1.00		TH
Thorium 230	14269-63-7	1.08	0.59	0.734	1.00		TH
Thorium 232	TH-232	0.747	0.34	0.317	1.00		TH
Neptunium 237	13994-20-2	-4.68	9.4	0.357	1.00	U	NP

200-PW-2 OU Characterization Vadose Zone -  
Soil ("L" Well)

DATA SHEETS

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>CHPRC</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>02/11/10</u>

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4082

REVISION 1

Test NP Matrix SOLID

SDG 7515

Contact N. Joseph Verville

LAB METHOD SUMMARY

NEPTUNIUM IN SOLIDS

ALPHA SPECTROSCOPY

Client CHPRC

Contract No. 33677

Contract SDG H4082

RESULTS

LAB RAW SUP- Neptunium  
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID 237

Preparation batch 7232-030

R911075-01	7515-001	B22V37	U
R911075-02	7515-002	B22V28	U
R911075-03	7515-003	B22VR4	U
R911075-04	7515-004	B22V31	U
R911075-05	7515-005	B22V34	U
R911075-06	7515-006	Lab Control Sample	ok
R911075-07	7515-007	Method Blank	U
R911075-08	7515-008	Duplicate (R911075-01)	- U

Nominal values and limits from method RDLs (pCi/g) 1.00

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED

Preparation batch 7232-030 2σ prep error 14.8 % Reference Lab Notebook No. 7232 pg. 30

R911075-01	B22V37	0.310	0.500	64	113	25	12/08/09	12/08	SS-031
R911075-02	B22V28	0.317	0.500	60	113	29	12/08/09	12/08	SS-032
R911075-03	B22VR4	0.140	0.500	50	113	29	12/08/09	12/08	SS-033
R911075-04	B22V31	0.421	0.500	47	113	28	12/08/09	12/08	SS-034
R911075-05	B22V34	0.357	0.500	56	113	26	12/08/09	12/08	SS-035
R911075-06	Lab Control Sample	0.105	0.500	60	113		12/08/09	12/08	SS-036
R911075-07	Method Blank	0.113	0.500	56	114		12/08/09	12/08	SS-038
R911075-08	Duplicate (R911075-01)	0.103	0.500	66	114	25	12/08/09	12/08	SS-042

Nominal values and limits from method 1.00 0.500 30-110 100 180

PROCEDURES REFERENCE NP237\_LLE\_PLATE\_AEA  
SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 1  
CP-930 Neptunium from Solids and Water by Extraction Chromatography, rev 5  
CP-008 Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD MDA 0.233 ± 0.262  
FOR 8 SAMPLES YIELD 57 ± 13

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLINE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-LMS  
Version 3.06  
Report date 02/11/10

## EBERLINE ANALYTICAL/RICHMOND

REVISION 1

SAMPLE DELIVERY GROUP H4082

Test TH Matrix SOLID  
 SDG 7515  
 Contact N. Joseph Verville

## LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client CHPRC  
 Contract No. 33677  
 Contract SDG H4082

## RESULTS

LAB RAW SUF-

SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Thorium 228	Thorium 230	Thorium 232
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Preparation batch 7232-030

R911075-01		7515-001	B22V37	0.559	0.802	0.698
R911075-02		7515-002	B22V28	0.856	U	0.691
R911075-03		7515-003	B22VR4	0.486	1.00	0.555
R911075-04		7515-004	B22V31	1.02	1.46	1.06
R911075-05		7515-005	B22V34	0.747	1.08	0.747
R911075-06		7515-006	Lab Control Sample		ok	
R911075-07		7515-007	Method Blank	U	U	U
R911075-08		7515-008	Duplicate (R911075-01)	ok	ok U	ok

Nominal values and limits from method	RDLs (pCi/g)	1.00	1.00	1.00
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## METHOD PERFORMANCE

LAB RAW SUF-

SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 7232-030 2σ prep error 8.0 % Reference Lab Notebook No. 7232 pg. 30

R911075-01		B22V37	0.643	0.250			89	150			21	12/04/09	12/04	SS-028
R911075-02		B22V28	0.628	0.250			92	150			25	12/04/09	12/04	SS-029
R911075-03		B22VR4	0.639	0.250			95	150			25	12/04/09	12/04	SS-030
R911075-04		B22V31	0.784	0.250			89	150			24	12/04/09	12/04	SS-031
R911075-05		B22V34	0.734	0.250			91	150			22	12/04/09	12/04	SS-032
R911075-06		Lab Control Sample	0.822	0.250			66	150				12/04/09	12/04	SS-033
R911075-07		Method Blank	0.729	0.250			95	150				12/04/09	12/08	SS-031
R911075-08		Duplicate (R911075-01)	0.776	0.250			86	151			21	12/04/09	12/04	SS-053

Nominal values and limits from method	1.00	0.250	30-110	150	180
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PROCEDURES	REFERENCE	THISO_IE_PLATE_ABA
SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 1	
CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 5	
CP-008	Heavy Element Electroplating, rev 13	

AVERAGES ± 2 SD	MDA	<u>0.719</u> ± <u>0.149</u>
FOR 8 SAMPLES	YIELD	<u>88</u> ± <u>19</u>

## METHOD SUMMARIES

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol CHPRC  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
 Report date 02/11/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4082

REVISION 1

Test I Matrix SOLID  
SDG 7515  
Contact N. Joseph Verville

LAB METHOD SUMMARY

IODINE 129 IN SOLIDS  
GAMMA SPECTROSCOPY

Client CHPRC  
Contract No. 33677  
Contract SDG H4082

RESULTS

LAB RAW SUP-  
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Iodine 129

Preparation batch 7232-030

R911075-01	7515-001	B22V37	U
R911075-02	7515-002	B22V28	U
R911075-03	7515-003	B22VR4	U
R911075-04	7515-004	B22V31	U
R911075-05	7515-005	B22V34	U
R911075-06	7515-006	Lab Control Sample	ok
R911075-07	7515-007	Method Blank	U
R911075-08	7515-008	Duplicate (R911075-01)	- U

Nominal values and limits from method RDLs (pCi/g) 5.00

METHOD PERFORMANCE

LAB	RAW	SUP-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	keV	HELD PREPARED	YZED DETECTOR

Preparation batch 7232-030 2σ prep error 19.4 % Reference Lab Notebook No. 7232 pg. 30

R911075-01	B22V37	1.56	1.00	60	600	31	12/12/09	12/14	GRB-220
R911075-02	B22V28	1.63	1.00	84	400	35	12/12/09	12/14	GRB-221
R911075-03	B22VR4	1.53	1.00	89	400	35	12/12/09	12/14	GRB-222
R911075-04	B22V31	1.78	1.00	69	400	34	12/12/09	12/14	GRB-223
R911075-05	B22V34	1.55	1.00	86	400	32	12/12/09	12/14	GRB-224
R911075-06	Lab Control Sample	1.63	1.00	98	400		12/12/09	12/14	GRB-225
R911075-07	Method Blank	1.58	1.00	95	400		12/12/09	12/14	GRB-227
R911075-08	Duplicate (R911075-01)	1.95	1.00	56	400	31	12/12/09	12/14	GRB-228

Nominal values and limits from method 5.00 1.00 40-110 300 180

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBERLINE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-LMS  
Version 3.06  
Report date 02/11/10

# EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4082

REVISION 1

Test I Matrix SOLID

SDG 7515

Contact N. Joseph Verville

## LAB METHOD SUMMARY, cont.

IODINE 129 IN SOLIDS

GAMMA SPECTROSCOPY

Client CHPRC

Contract No. 33677

Contract SDG H4082

PROCEDURES	REFERENCE	I129_SEP_LEPS_GS
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1
	SPP-062	Sample Aliquoting, rev 1
	CP-024	Iodine-129, Sample Dissolution, rev 8
	CP-530	Iodine-129 Purification, rev 6
	CP-008	Heavy Element Electroplating, rev 13

AVERAGES $\pm$ 2 SD	MDA	<u>1.65</u>	$\pm$	<u>0.288</u>
FOR 8 SAMPLES	YIELD	<u>80</u>	$\pm$	<u>32</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE

Protocol CHPRC

Version Ver 1.0

Form DVD-LMS

Version 3.06

Report date 02/11/10

## EBERLINE ANALYTICAL/RICHMOND

REVISION 1

SAMPLE DELIVERY GROUP H4082

Test C Matrix SOLIDSDG 7515Contact N. Joseph Verville

## LAB METHOD SUMMARY

CARBON 14 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client CHPRCContract No. 33677Contract SDG H4082

## RESULTS

LAB RAW SUP-

SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Carbon 14

Preparation batch 7232-030

R911075-01	7515-001	B22V37	U
R911075-02	7515-002	B22V28	U
R911075-03	7515-003	B22VR4	U
R911075-04	7515-004	B22V31	U
R911075-05	7515-005	B22V34	U
R911075-06	7515-006	Lab Control Sample	ok
R911075-07	7515-007	Method Blank	U
R911075-08	7515-008	Duplicate (R911075-01)	- U

Nominal values and limits from method RDLs (pCi/g) 50.0

## METHOD PERFORMANCE

LAB	RAW	SUP-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR

Preparation batch 7232-030 2σ prep error 10.0 % Reference Lab Notebook No. 7232 pg. 30

R911075-01	B22V37	5.77	0.224	100	50	19	12/02/09	12/02	LSC-006
R911075-02	B22V28	6.12	0.206	100	50	23	12/02/09	12/02	LSC-006
R911075-03	B22VR4	5.15	0.247	100	50	23	12/02/09	12/02	LSC-006
R911075-04	B22V31	5.32	0.240	100	50	22	12/02/09	12/02	LSC-006
R911075-05	B22V34	5.44	0.229	100	50	20	12/02/09	12/02	LSC-006
R911075-06	Lab Control Sample	15.4	0.200	100	10		12/02/09	12/03	LSC-006
R911075-07	Method Blank	6.37	0.200	100	50		12/02/09	12/02	LSC-006
R911075-08	Duplicate (R911075-01)	5.71	0.224	100	50	19	12/02/09	12/02	LSC-006

Nominal values and limits from method 50.0 0.200 10 180

PROCEDURES REFERENCE C14\_COX\_LSC  
CP-251 Tritium/Carbon-14 Oxidation, rev 11

AVERAGES ± 2 SD MDA 6.91 ± 6.91  
FOR 8 SAMPLES YIELD 100 ± 0

## METHOD SUMMARIES

Page 5

## SUMMARY DATA SECTION

Page 20

Lab id EBRLINEProtocol CHPRCVersion Ver 1.0Form DVD-LMSVersion 3.06Report date 02/11/10

# EBERLINE ANALYTICAL/RICHMOND

REVISION 1

SAMPLE DELIVERY GROUP H4082

Test H Matrix SOLID  
SDG 7515  
Contact N. Joseph Verville

## LAB METHOD SUMMARY

TRITIUM IN SOLIDS  
LIQUID SCINTILLATION COUNTING

Client CHPRC  
Contract No. 33677  
Contract SDG H4082

## RESULTS

LAB RAW SUP-  
SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Tritium

Preparation batch 7232-030

R911075-01	7515-001	B22V37	U
R911075-02	7515-002	B22V28	U
R911075-03	7515-003	B22VR4	U
R911075-04	7515-004	B22V31	U
R911075-05	7515-005	B22V34	U
R911075-06	7515-006	Lab Control Sample	ok
R911075-07	7515-007	Method Blank	U
R911075-08	7515-008	Duplicate (R911075-01)	- U

Nominal values and limits from method RDLs (pCi/g) 400

## METHOD PERFORMANCE

LAB RAW SUP- MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-  
SAMPLE ID TEST FIX CLIENT SAMPLE ID pCi/g g FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR

Preparation batch 7232-030 2σ prep error 10.0 % Reference Lab Notebook No. 7232 pg. 30

R911075-01	B22V37	6.70	0.224	100	50	19	12/02/09	12/02	LSC-007
R911075-02	B22V28	8.13	0.206	100	50	23	12/02/09	12/02	LSC-007
R911075-03	B22VR4	6.13	0.247	100	50	23	12/02/09	12/02	LSC-007
R911075-04	B22V31	7.05	0.240	100	50	22	12/02/09	12/02	LSC-007
R911075-05	B22V34	7.31	0.229	100	50	20	12/02/09	12/02	LSC-007
R911075-06	Lab Control Sample	7.28	0.200	100	50		12/02/09	12/03	LSC-007
R911075-07	Method Blank	7.44	0.200	100	50		12/02/09	12/02	LSC-007
R911075-08	Duplicate (R911075-01)	6.76	0.224	100	50	19	12/02/09	12/02	LSC-007

Nominal values and limits from method 400 0.200 25 180

PROCEDURES REFERENCE TRITIUM\_COX\_LSC  
CP-251 Tritium/Carbon-14 Oxidation, rev 11

AVERAGES ± 2 SD MDA 7.10 ± 1.19  
FOR 8 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-LMS  
Version 3.06  
Report date 02/11/10

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP H4082

REVISION 1

Test NI L Matrix SOLID

SDG 7515

Contact N. Joseph Verville

LAB METHOD SUMMARY

NICKEL 63 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client CHPRC

Contract No. 33677

Contract SDG H4082

RESULTS

LAB RAW SUF-

SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Nickel 63

Preparation batch 7232-030

R911075-01	7515-001	B22V37	U
R911075-02	7515-002	B22V28	U
R911075-03	7515-003	B22VR4	U
R911075-04	7515-004	B22V31	U
R911075-05	7515-005	B22V34	U
R911075-06	7515-006	Lab Control Sample	ok
R911075-07	7515-007	Method Blank	U
R911075-08	7515-008	Duplicate (R911075-01)	- U

Nominal values and limits from method RDLs (pCi/g) 30.0

METHOD PERFORMANCE

LAB RAW SUF-

SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT keV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
-----------	----------	------------------	--------------	-----------	-------------	---------------	------------	----------	--------------	-------------	--------------	--------------	-------------------	------	----------

Preparation batch 7232-030 2σ prep error 11.2 % Reference Lab Notebook No. 7232 pg. 30

R911075-01		B22V37	4.35	0.500			68		50			26	12/09/09	12/09	LSC-004
R911075-02		B22V28	3.80	0.500			77		50			30	12/09/09	12/09	LSC-004
R911075-03		B22VR4	3.68	0.500			80		50			30	12/09/09	12/09	LSC-004
R911075-04		B22V31	3.60	0.500			81		50			29	12/09/09	12/09	LSC-004
R911075-05		B22V34	3.92	0.500			75		50			27	12/09/09	12/09	LSC-004
R911075-06		Lab Control Sample	3.32	0.500			87		50				12/09/09	12/09	LSC-004
R911075-07		Method Blank	3.38	0.500			86		50				12/09/09	12/09	LSC-004
R911075-08		Duplicate (R911075-01)	3.87	0.500			76		50			26	12/09/09	12/09	LSC-004

Nominal values and limits from method 30.0 0.500 40-110 25 180

PROCEDURES REFERENCE NI63\_LSC  
SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 1  
CP-281 Nickel-63 Purification By Extraction  
Chromatography, rev 5

AVERAGES ± 2 SD MDA 3.74 ± 0.656  
FOR 8 SAMPLES YIELD 79 ± 12

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-LMS  
Version 3.06  
Report date 02/11/10

SDG 7515  
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4082

## SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- \* LAB SAMPLE ID is the lab's primary identification for a sample.
- \* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- \* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- \* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- \* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

## REPORT GUIDES

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/11/10

SDG 7515  
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4082

## PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- \* The preparation batches are shown in the same order as the Method Summary Reports are printed.
- \* Only analyses of plachets relevant to the SDG are included.
- \* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- \* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified.  
Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one plachet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/11/10

SAMPLE DELIVERY GROUP H4082

SDG 7515  
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4082

## WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- \* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- \* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- \* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- \* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- \* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- \* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

## REPORT GUIDES

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/11/10

SDG 7515  
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4082

## DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- \* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- \* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- \* ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- \* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- \* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

## REPORT GUIDES

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/11/10

SDG 7515  
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4082

## DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- \* An MDA is underlined if it is bigger than its RDL.

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/11/10

SDG 7515  
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC  
Contract No. 33677  
Case no SDG H4082

DATA SHEET

- \* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- \* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- \* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/11/10

SDG 7515  
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4082

## LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- \* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- \* REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- \* The first, computed limits for the recovery reflect:
  1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
  2. The error of ADDED.
  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- \* The second limits are protocol defined upper and lower QC limits for the recovery.
- \* The recovery is underlined if it is outside either of these ranges.

## REPORT GUIDES

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/11/10

SAMPLE DELIVERY GROUP H4082

SDG 7515  
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC  
Contract No. 33677  
Case no SDG H4082

## DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- \* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- \* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- \* The second limit for the RPD is the larger of:

1. A fixed percentage specified in the protocol.

## REPORT GUIDES

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/11/10

SDG 7515  
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC  
Contract No. 33677  
Case no SDG H4082

## DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- \* The RPD is underlined if it is greater than either limit.
- \* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- \* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

## REPORT GUIDES

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
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SDG 7515  
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC  
Contract No. 33677  
Case no SDG H4082

## MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- \* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- \* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.
- \* The first, computed limits for the recovery reflect:
  1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
  2. The error of ADDED.
  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- \* The second limits are protocol defined upper and lower QC limits

## REPORT GUIDES

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/11/10

SDG 7515  
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4082

## MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- \* The recovery is underlined (out of spec) if it is outside either of these ranges.

## REPORT GUIDES

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/11/10

SDG 7515  
Contact N. Joseph Verville

## REPORT GUIDE

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4082

## METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- \* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- \* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- \* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- \* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- \* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
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SDG 7515  
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC  
Contract No. 33677  
Case no SDG H4082

## METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- \* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
  - \* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.
- MDAs are underlined if greater than the printed RDL.
- \* Aliquots are underlined if less than the nominal value specified for the method.
  - \* Preparation factors are underlined if greater than the nominal value specified for the method.
  - \* Dilution factors are underlined if greater than the nominal value specified for the method.
  - \* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
  - \* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
  - \* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

## REPORT GUIDES

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
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SDG 7515  
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC  
Contract No. 33677  
Case no SDG H4082

## METHOD SUMMARY

- \* Count times are underlined if less than the nominal value specified for the method.
- \* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- \* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- \* Days Held are underlined if greater than the holding time specified in the protocol.
- \* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol CHPRC  
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SDG 7515  
Contact N. Joseph Verville

GUIDE, cont.

Client CHPRC  
Contract No. 33677  
Case no SDG\_H4082

## METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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## SUMMARY DATA SECTION

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Lab id EBRLNE  
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Version 3.06  
Report date 02/11/10

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F10-025-001	PAGE 1 OF 1
COLLECTOR KRAUER	COMPANY CONTACT DYEKMAN, DL	TELEPHONE NO. 373-2530	PROJECT COORDINATOR DYEKMAN, DL	PRICE CODE 8N	DATA TURNAROUND: 45 Days / 45 Days
SAMPLING LOCATION C7514 (299-E24-25); 1-070	PROJECT DESIGNATION 200-PW-2 OU Characterization Vadose Zone - Soil ("L" Well)		SAF NO. F10-025	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GWS-112	FIELD LOGBOOK NO. HNF-N-5815	ACTUAL SAMPLE DEPTH 140.4 ft 142.5	COA 302117ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO Eberline Services	OFFSITE PROPERTY NO. SEE PTR	BILL OF LADING/AIR BILL NO. 708149515800			

MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Solids O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION None			
		TYPE OF CONTAINER G/P			
		NO. OF CONTAINER(S) 1			
		VOLUME 120mL			
		SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS			

SAMPLE NO. B22V37	MATRIX* SOIL	SAMPLE DATE 11-13-09	SAMPLE TIME 0950		
SPECIAL HANDLING AND/OR STORAGE RADIOACTIVE TIE TO: B22VD6					

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM Ed Krauer	DATE/TIME 11-13-09 1122	RECEIVED BY/STORED IN MO-413-R2	DATE/TIME 11-13-09 1122	** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. (1) Carbon-14; Nickel-63; Neptunium-237; Iodine-129; Isotopic Thorium (Thorium-232) Tritium - H3;  ORIGINAL	
RELINQUISHED BY/REMOVED FROM SSU-R2	DATE/TIME NOV 18 2009	RECEIVED BY/STORED IN DW Brotherton	DATE/TIME NOV 18 2009		
RELINQUISHED BY/REMOVED FROM DW Brotherton	DATE/TIME NOV 18 2009	RECEIVED BY/STORED IN PE-NATHAN	DATE/TIME 11/19/09 0930		
RELINQUISHED BY/REMOVED FROM for ex	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME





[illegible]

[illegible]



**RICHMOND, CA LABORATORY**  
SAMPLE RECEIPT CHECKLIST

REVISION 1

Client: CHPRC City RICHMOND State WA  
Date/Time received 11/19/09 0930 CoC No. FR-025-001, 013, 017, 209, 026  
Container I.D. No. 6WS-112 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [x] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [x] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [x] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [x] No [ ] N/A [ ]
5. Packing material is: Wet [ ] Dry [x]
6. Number of samples in shipping container: 5 Sample Matrix S
7. Number of containers per sample: 1 (Or see CoC         )
8. Samples are in correct container Yes [x] No [ ]
9. Paperwork agrees with samples? Yes [x] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [x]
11. Samples are: In good condition [x] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [x] pH          Preservative
13. Describe any anomalies: UB 11/20/09

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date
15. Inspected by [Signature] Date: 11/19/09 Time: 1000

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
<u>All samples</u>	<u>660</u>						

Ion Chamber Ser. No.           
Alpha Meter Ser. No.           
Beta/Gamma Meter Ser. No. 100482

Calibration date           
Calibration date           
Calibration date 05 AUG 09